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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/568,691

08/30/2006

Lindsay Jane Bawden

620-418

2784

23117

7590

08/05/2009

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EXAMINER

HARRIS, ALANA M

ART UNIT

PAPER NUMBER

1643

MAIL DATE

DELIVERY MODE

08/05/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/568,691	<b>Applicant(s)</b> BAWDEN ET AL.	
	<b>Examiner</b> Alana M. Harris, Ph.D.	<b>Art Unit</b> 1643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 May 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) 37-43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-36 and 44-48 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of Group I (claims 1-36 and 44-48 with election of species, H4 Lys 16 Ac and H3 Lys 79 (Me)) in the reply filed on May 18, 2009 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claims 1-48 are pending.

Claims 37-43, drawn to non-elected inventions are withdrawn from examination.

Claims 3-6, 10-13, 17-19, 22-26, 29, 30, 32, 33, 35 and 48 have been amended.

Claims 1-36 and 44-48 are examined on the merits to the extent the elected species are H4 Lys 16 Ac from Table 1 and H3 Lys 79 (Me) from Table 2.

### ***Claim Objections***

3. Claim 23 is objected to because of the following informality: the claim does not end with a period, hence it is not clear if additional text is missing. Correction is required.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 4, 5, 10, 11, 16-18, 21-24, 34, 36 and 48 are rejected under 35

U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Claims 4, 5, 10, 11, 16, 17, 22-24, 34, 36 and 48 are vague and indefinite because they reference residues, however no corresponding sequence or SEQ ID number is identified. In order to properly and efficiently search the modification the sequence from which is contained should be identified. Accordingly, the metes and bounds cannot be determined.

b. Claim 18, line 2 cites "...the disease condition is...". Claim 15 lacks antecedent bases for this recitation. Furthermore, claim 21, line 2 cites "...an autoimmune disease" and the independent claim 20 lacks antecedent bases for this recitation.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-36 and 44-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allis et al./ U.S. Patent Application Publication number 2006/0073517 A1 (effective filing date March 10, 2003), and further in view of Allis(b) et al./ U.S. Patent Application Publication number 2005/0069931 A1 (effective filing date February 19, 2003). Figure 4 within the Allis publication teaches "...whole cell yeast extracts of various mutants cell lines, probed with methyl-specific H3 antibodies", see page 2, section 0014. The histone methylases detected include  $\alpha$ -Me(Lys79)H3 and H4 methylases in general. Allis also teaches the detection of H3 Lys 79 (Me) and H4 Lys 16 acetyl, see page 8, sections 0072 and 0075, respectively. Allis teaches a method of detecting chromatin alterations...associated with a disease state, wherein chromatin from both normal and diseased tissues are contacted with an antibody, see page 19, claim 24. The staining pattern and detectable differences of the antibody bound chromatin isolated from normal tissue to the staining pattern of the antibody bound chromatin isolated from the diseased state is implemented in diagnosing disease. The diagnostic assay includes antibodies linked to detectable labels and attached to a solid support, see page 11, sections 0093 and 0095. Allis does not teach the claimed method, wherein a biological fluid sample is obtained from an individual and the disease

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condition is a cancer or an autoimmune disease. Allis also does not the claimed method, wherein DNA associated with the nucleosome comprising a modified histone is isolated, amplified and sequenced.

However, Allis(b) teaches assaying isolated nucleosomes from a patient's blood or serum for specific histone amino terminus modifications as diagnostic indicators of disease, such as cancer, see abstract; page 3, section 0044; page 4, section 0059; and page 5, section 0065. Anti-modified histone antibodies are used in the assay to identify a modified histone, as well as antibodies that are capable of binding and isolating nucleosomes, see page 3, section 0049. Moreover, nucleosomes are immunoprecipitated and the associated DNA is purified, labeled and subjected to molecular analytical techniques, such as PCR and sequence analysis, see page 5, section 0061; and page 6, sections 0069 and 0070. Also taught in Allis(b) is the implementation of DNA microarrays and hybridization, see page 6, section 0068. It would have been *prima facie* obvious to one of ordinary skill in the art at the time the claimed invention was made based on both references to assess nucleosomes and modified histone proteins in a number of biological fluids and conduct protein and nucleic acid based assays in order to diagnose diseases. One of ordinary skill in the art would have been motivated to do so with a reasonable expectation of success by teachings in both Allis references to assay specific histone modifications because they serve as diagnostic markers of disease, see Allis page 1, section 0010; and Allis(b) page 1, sections 0007 and 0008.

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8. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Alana M. Harris, Ph.D. whose telephone number is (571)272-0831. The Examiner works a flexible schedule, however she can normally be reached between the hours of 7:30 am to 6:30 pm with alternate Fridays off.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Larry R. Helms, Ph.D. can be reached on (571) 272-0832. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alana M. Harris, Ph.D.  
03 August 2009  
/Alana M. Harris, Ph.D./  
Primary Examiner, Art Unit 1643